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ARTICLE I.

ANATOMICAL AND PHYSIOLOGICAL OBJECTIONS TO PHRENOLOGY EXAMINED.

Among all the cavils and objections that have been brought against phrenology, few have ever ventured to call in question its fundamental principles. These have their foundation too deeply laid in anatomy and physiology, and are too well fortified by facts and arguments, deduced from the great laws of physical organisation, to be easily refuted or overthrown. As but little was known respecting the true structure and functions of the brain previous to the discovery of phrenology, the great majority of the medical profession (who might naturally be supposed to understand the subject) were unprepared to decide on its claims to credence and support. Some members of this profession, however, before condemning or rejecting phrenology, wisely set themselves to work in examining into its merits, as well as the nature and amount of evidence upon which its principles professed to be based; *such* have invariably become believers in the science. At the same time, there have been others, (but, be it said in honour of the profession, the number has been very small,) who have, either through ignorance, prejudice, or preconceived opinions, most violently opposed phrenology, and have brought to bear against it all the weapons that could possibly be manufactured by means of ridicule, misrepresentation, and sophistry. With what success this opposition has now been carried on for more than forty years, may be learned from the constantly increasing advancement and general popularity of the science, in the most intellectual and enlightened portions of Europe and America.

Some have pretended to base their objections to phrenology on anatomy and physiology. Arguments and statements drawn from this source have the appearance of much plausibility, and are very

effective in operating upon, and forming the opinions of, the great mass of the public. That our readers may know the precise nature of such objections, and have in their possession the means of fully answering them, we are induced to present the following article—an article which has never been copied into, or noticed in, any phrenological work, though it contains, perhaps, a clearer and more satisfactory answer to the leading anatomical and physiological objections to the science, than can any where else be found within the same compass. This article is a review of Dr. Sewall's lectures against phrenology, and appeared in the Eclectic Journal of Medicine, for August, 1837, edited by Dr. John Bell, of this city. The manner in which these objections are here critically examined, and ably answered, needs no comments. The reader, after perusing the article, we are sure, will not hesitate to decide that the work of the reviewer was *well done*. After a few introductory remarks, Dr. Bell proceeds as follows:—

Structure

His first count, in the impeachment of phrenology, is, that it is not sustained by the structure and organisation of the brain. This allegation must be advanced merely *ad captandum*, and to influence the general reader and the tyro in physiology. Where, we would ask the lecturer, is our belief of the function of any part of the nervous system, or of any of the external senses, sustained or confirmed by structure and organisation? There is, indeed, an obvious mechanism in the eye and ear for the transmission of light, and of the vibrations of the air; but who, after the most careful inspection and longest study of the retina, could have declared, *à priori*, that it was excitable by the stimulus of light, and of light alone, as far as regards impression on it, being followed by the sensation of colours, form, &c.? Who could have declared, from the most minute examination of the portio mollis, and its branches separated from the labyrinth, that it, and it alone, conveyed the impressions which give rise, on reaching the brain, to the sensation of sounds? Even now that we are assured of this correspondence between these nervous expansions and their specific exciters, can we yet detect or explain the fact, by any peculiarity of structure or organisation, indicative of primary intention on the part of the great Architect.

S. Nerves

If our knowledge of function depended on an evident relation between it and organisation, why was physiology not enriched, long before the present age, by a knowledge of the fact of the double property of the spinal nerves? That each one of those has a double root, and that the posterior is longer, and marked by an enlargement or ganglion, has long been known. Monro described this arrangement, and depicted it in his plates of the nervous system now before

us. But neither he, nor any other anatomist conversant with the fact, was led to infer, from structure and organisation, a twofold property in the double root, nor the possession of sensibility by the posterior or ganglionic, and of motility by the anterior. Do we derive any support from the structure and organisation of the portio dura and of the fifth nerve, in elucidation of the different functions performed by them? Or could all the aids in the use of the scalpel, the microscope, and chemical reagents, teach us, *à priori*, the difference in function between the larger and chief, or ganglionic portion of the fifth, or that for common sensation to all parts of the face, and the smaller muscular branch which goes to the lower jaw. Yet more: Wherein were we guided to the discovery, and now that the discovery is made, wherein are our convictions a whit strengthened, by any peculiarity of structure and organisation in the gustatory branch of the fifth nerve, or that of special sensation, different from the other branches, or those of general sensation?

Dr. Sewall, in continuation of this part of his argument, repeats the often alleged objection to the existence of the phrenological organs, in their not being distinctly marked, nor indeed separated by any visible boundary. On the same ground, he ought to deny the existence of the two tracts on each side of the spinal marrow, which possess each a different property, because it is impossible to see or to draw any evident line of demarcation between the anterior or motor and the posterior or sensitive tract. These two portions of spinal marrow are as continuous, and blended with each other, as are the phrenological organs in the cerebrum; and yet the properties or functions of the former are not more diverse than those of any two contiguous ones of the latter. And again: there is uninterrupted continuity of white nervous fibres from the medulla spinalis, through the medulla oblongata, on to the cerebellum and cerebrum. But no anatomist or physiologist will be found to contend for similarity of function in all these divisions of the cerebro-spinal axis, or to deny a marked difference of function, because there is not corresponding difference of structure.

2 tracts.

It would puzzle, we believe, the most skilful anatomist and accurate microscopical observer to point out any line or boundary between that portion of the Schneiderian membrane, which is supplied by a branch of the fifth nerve, and is the recipient of stimulants provoking common sensation, and that other and upper portion, which derives its sensibility from the olfactory nerves, and is in consequence the seat of special sensation. Neither the eye alone, nor the eye aided by the microscope, can enable us to indicate where the surface of the mucous membrane, lining the mouth and digestive

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canal, ceases to impart the sensations of touch, and of heat and cold. Still more wonderful, and if we were to adopt Dr. Sewall's mode of reasoning, incredible, are the differences in function of the several divisions of the gastro-intestinal cavity, especially of the stomach, the duodenum and other small intestines, and the colon—continuous as are these one with another, and performing their respective offices through the medium of a membrane (the mucous) which exhibits, throughout, no differences adequate to enable us to tell, *à priori*, the changes of the alimentary matter in its passage over it. Surely, the most enthusiastic anatomist will not pretend to say that the stomach gives evidence in its "structure and organisation" of the part which it performs in digestion? Neither this nor any other function has been discovered by the peculiar structure of the organ on which it depends. All have been ascertained by observation; by noting the relation between the stimulants and exciters of the organ itself, and not by any evident relation between the structure or mechanism of the organ and its function. It is true that, the function once ascertained, we can then see, in some instances, as in the mechanism of the heart, the direction of its valves, and of the valves of the veins, the adaptation of organisation to function. But even in this case, clear and evident as are the organic arrangements, they did not of themselves, if at all, prompt or guide to a discovery of the office for which they were intended.

The first inquiry, therefore, of Dr. Sewall—"How far phrenology is sustained by the structure and organisation of the brain?"—may be answered by saying; just as far as any part of physiology is similarly sustained. If we are content to believe in the functions of the other organs, without this kind of evidence, we need not be sceptical in regard to those of the brain.

But the function of an organ once known, we can predicate, in general, from the quantity of specific tissue or structure of the latter, the power of the former. And this axiom, overlooked by Dr. Sewall, is the best answer to his denial of the fact, that there is any established relation between the volume of the brain and the powers of the mind. The contractility of a muscle is in proportion to the quantity of fibrinous matter of which it consists, and its motive power is in proportion to its size—not adventitious size, by intervening adipose and cellular tissue, or by infiltrations in them, but true bulk, made up of a deposit of fibrin. The larger a healthy heart, that is to say, the more it abounds in muscular fibres, themselves made up mainly of fibrin, the more powerful is its expulsive and propelling action, and the greater its energy as the central and chief organ of the circulation. So, also, of the function of the liver,

as measured by the amount of its secreted fluid: it will be greater the larger is the organ, and the more bulky its peculiar parenchyma, and the more numerous its acini. Size, when caused by disease, ceases to be a measure, as where there is a fatty degeneration of the liver, or where the growth is of the cellular tissue intervening between the vessels and the acini and excretory ducts, or where this tissue is partially infiltrated with serous fluids.

Brain.

The brain is no exception to this physiological axiom. This organ consists of a deposition of neurine, enveloped by membrane, and copiously supplied with blood. Its laws of nutrition are the same as those of other organs; its activity and stages of function will be found to correspond with its periods of developement and its size. We suppose now that we are addressing those who believe that the brain is the material instrument of the mind, without reference to specification of organs, whose functions consist in the performance of special faculties. If the brain be this grand instrument, we would ask, wherein consists its peculiarity of structure and organisation for this purpose, if not in the deposition of neurine, and the fibrous arrangement of the latter? The convolutions and ventricles are secondary modifications of structure, by which greater volume and expansion of surface are secured in the same space.

Size.

We only invoke the application of admitted physiological laws, when we affirm that the brain must, like every other organ, in order to discharge its appropriate functions, have acquired a completeness of growth and a developement, measured not only by the harmonious relations of its several parts and outlines, but also by the internal or interstitial deposit of its peculiar distinctive element. The greater its size, provided always this depend on the abundance of its peculiar element, the more apt and powerful will be the display of its functions; just as the larger the muscle and the more abundant its fibrinous part, the greater is its motive power. As we cannot believe otherwise, than that there is a direct and positive relation between function and the matter and organic arrangement of the brain, so neither can we understand why there should be increase of this matter without increase of power of the function; unless we were to suppose that there is a superfluity of organ, and a waste of skill in the great Architect. Not only would this waste be exemplified in the needless quantity of brain, but in the needless extent of membranes and capacity of bony case for its investment and protection, if a large brain had no more power than a small one. It is not thus that we find *his* intention expressed, or rather marred, in the laws of structure and function in the organs of the body at large; and hence we have no right, from any abundant zeal with which we may be

actuated, to impute to him imperfection in the case of the brain, the more especially when we would profess at the same time to glorify him, by denouncing certain doctrines as favouring materialism and fatalism.

When speaking of the size of an organ, it will have been seen that we were careful to specify a size maintained by a healthy growth of its peculiar structure, and deposition of its peculiar element; and not on the enlargement of common tissue, or an adventitious deposit between its fibres. Size in health is indicative of the actual amount of organised matter, and the latter is again of the completeness of functional effects to be obtained from it. In disease, the size of an organ may, and often does, depend on other conditions; some, and the chief of which, have been already mentioned. In this case, as where we see a large and dropsical brain, for instance, size is not an evidence of power and strength of mind; any more than the muscles of the limbs, large by infiltration, would be of strength and activity of locomotive power.

But, it will be asked, are there not different degrees of density and amount of structure in the same bulk, all of them compatible with health? May there not, for example, be two masses of brain, or of muscles of equal size, and yet of different degrees of power? To a certain extent this may be; as where the fibrin of that muscular tissue, or the neurine of the nervous, is more abundantly divided by lax cellular tissue. On these known differences rests the doctrine of the temperaments. The bodies of some persons are distinguished by a predominance of the white fluids and vessels, and of the cellular and adipose tissues; whilst those of others are characterised by a greater proportion of red blood and fibrin, both in this fluid and in the muscles; and some, again, with this activity of the blood-vessel system, will have a large allowance, also, of neurine, with little intervening cellular matter; consequently, an excess of the nervous system. We must be careful, however, on this point, not to confound power with its readiness to be called into action, or its habitual activity. A man of large and massive frame of trunk and limb may be, as he often is, slow and heavy in his movements of locomotion, and averse to undertake any labour or feat requiring a display of strength, which another of less size of muscles even would readily engage in. But if once the former be roused, goaded as it were to action, he will manifest prodigious activity and strength, such as the latter cannot by any means equal. The power was possessed, but not used; and hence its existence was perhaps denied. Size, here, is still a criterion of strength.

In like manner, a person of lymphatic temperament, with little

activity of circulation, but possessing a large brain, may be often heavy, lumbering, as it were, in the process of thought and expression of ideas; but there is still an evident vigour of thought, and rectitude of judgment, which will inspire more confidence in a discerning observer, than the quick resolve, plausible common-places of ideas, and fluency of speech of a more excitable person, who has a smaller cerebral structure. Let the first be roused, as we sometimes see really to occur, by some strong incentive, and the latent powers are rendered evident, and show themselves in great ingenuity, a forcible and convincing logic and outpouring of language, which startle even those who had long known and thought they had formed a due estimate of his mind.

In the above instances, whether it have been of muscular or mental strength, we venture to say, that the power on which the manifestation depended, will be found to be the result or inevitable concomitant of size and quantity of the peculiar and specific matter of the organ, be it either fibrin for the muscle, or neurine for the brain. And all allowances made for temperaments, and the relative activity of function dependent on this cause, size will still be the criterion.

Phrenologists cannot be accused of needless refinement, still less subterfuge, in admitting the modifications of activity caused by temperaments, when Dr. Sewall, for example, points out how much the same individual differs from himself in the two states of repose and excitement. That two men with brains of equal size and identical developement, the one of a lymphatic, the other of a sanguine temperament, should differ in the readiness of mental manifestations to the degree that one is slow, balting, and uncertain in the delivery of his opinions, and the other quick, connected, and pointed, is no contradiction to the principles of phrenology, unless it were shown that full time being given to the former to express himself quietly, deliberately, and maturely, he is found to fall short of the other in the force of his reasoning, and the variety and abundance of his proofs and illustrations.

Not more contrasted are these two persons than the two states of brain and mind of the same individual, as thus related by Dr. Sewall in his second lecture:—

"The late William Pinckney, of Maryland, whose extraordinary power in debate is universally known, when unexcited, exhibited nothing in his appearance which manifested great activity and energy of mind; but when roused by debate, his face became suffused with blood, his eye sparkling and animated, his carotids pulsated violently, his jugular veins became swollen, and every thing indicated that the blood was carried to the head with an impetus,

proportioned to the excitement of the occasion, and his intellectual effort; and it was only during this cerebral orgasm, that his thoughts were poured forth with that fluency and power for which he was so remarkably distinguished. The same phenomena occurred, to some extent, in his private studies, whenever he fixed his mind intently on any subject for the purpose of deep investigation."

Changes, similar to the above, are experienced by nearly every man of any vigour of mind, when summoned to unwonted exertion, whether it be in public, or at his own desk. But it will hardly be alleged by Dr. Sewall, that Mr. Pinckney, when excited, acquired mental faculties other than those possessed by Mr. Pinckney when tranquil and passive, any more than that Hercules, engaged in one of his labours, can be supposed to have acquired more muscular power than he possessed when leaning quietly on his club. The faculties in the first case, and the power in the second, were constantly present; they were intimately associated with organisation; but they were only *manifested*, or called into *active display*, under some strong excitement. It cannot be contended that the more active circulation of blood in the brain, and its greater determination to this part, are the cause of new talents or of genius; since no proportion exists between the frequency of the former and a display of the latter. Were it so, every man in a furious passion would forthwith become a powerful reasoner, a fluent speaker, a poet, or a mathematician; and the exploding rhapsodies of poetry in favour of cerebral stimulation by intoxicating liquors, might once more obtain currency and credence. The true cause and support of mental power is the organic structure; the amount of the former corresponding with the mass and density of the latter. But the primary conditions, and occasional means of giving activity to the power, are various. Among the chief conditions, are temperament; among the occasions, the incentives furnished by necessity, imitation, a desire to excel and govern, &c. The brains of some men are habitually in the state of orgasm which Mr. Pinckney's brain is represented by Dr. Sewall to have occasionally exhibited; whilst those of others are habitually and uniformly as quiet and relatively passive as Mr. P.'s was in common. The lecturer, in confounding power with activity and manifestation, is led to assert, that "there is something which gives power to the mind, which has no connection with the volume of the brain;" but if a power can be thus indefinitely augmented, independently of and without increased volume, where was the necessity of any volume at all, or matter on which the volume depends, in order that power should have been originally possessed? That which can be indefinitely extended, without any increase of its

common material adjunct and associate, may, undoubtedly, be maintained at its common and average degree without this latter at all; and if we were to push the inference from Dr. Sewall's assertion, it would be, that a man may have a very respectable mind and be a passable philosopher, although destitute of brain, or with a monkey's allowance, just to save appearances.

In the second lecture, page 43, it is said,—"The doctrine, therefore, that man owes his intellectual superiority to an excess of brain, deserves no support from his comparison with the lower animals." The "therefore," in this sentence, is the expression of an inference drawn by Dr. Sewall, after a table furnished by Cuvier, in which it is shown that the proportion of the volume of the brain to that of the body, is not greater in man than in many animals. We were not aware that this kind of comparison was received as a standard, or test, by either phrenologists, or any other class of physiologists. Gall has distinctly stated its inapplicableness. The introduction by the lecturer of the name of Soemmerring, might have suggested another standard adopted by this distinguished writer in his examination of the subject. It is the relative proportion between the nerves connected with the brain and this organ itself. If we divide the brain into two parts, we have, 1, That which is immediately connected with the sensorial extremities of the nerves which receives their impression, and is therefore devoted to those common wants and purposes which we partake with animals. 2, That which includes the rest of the brain, and which may be considered as connecting the functions of the nerves with the faculties of the mind. In the greater proportionate volume of this second part, or of the brain proper, man is decidedly pre-eminent. There is, we believe, in fact, but one opinion among the physiologists who have taken the most pains to investigate the subject in all its bearings. It is, that the cerebral hemispheres are, proportionately to the rest of the encephalic mass, more developed in man than in other animals, and that these are the material instruments, the organs of the mental faculties. By developement, is understood not only the mass of the brain, but the number and distinctness, and consequently greater surface of the convolutions. In the constant proportion of the volume of the cerebral lobes to the degree of intelligence of the animals, comparative anatomy, says Cuvier, offers another confirmation.

The distinction to be made between the brain proper and its base, or the field of the nerves, in estimating the truth of the proposition, that man owes his superiority to his greater relative cerebral developement, seems to have been overlooked by Dr. Sewall, and, indeed,

by most of the opponents of phrenology. For the correct appreciation of a corollary from this proposition, that one man is superior to another in intellectual capacity, in virtue of his greater volume of brain, it must be remembered that intellect and mind are not synonymous terms, having even analogous meanings. To say, in general, that mind, with all its attributes, including propensities and sentiments, (passions and emotions,) and intellect, is powerful in proportion to the volume of the head, is, we believe, a truth. But it would not be correct to assume this same proposition for a part of the mind, the intellect, which can only apply to the whole.

The length of our remarks on the first two questions put by Dr. Sewall, will require of us to be more brief in our notice of the remaining ones. The third is, "How far is it possible to ascertain the volume of the brain in the living subject by measurement or observation?" The difficulties in the way of our success on this matter, are urged by the lecturer with some force—though with no great novelty. The general proposition, that the skull is formed on, and takes the shape of, the brain, has been so fully enforced and proved by various physiologists, especially by Gall, Spurzheim, Magendie, Vimont, &c. that we need not here enlarge on or enforce it by additional authority or argument. The experimental observations of Vimont were prosecuted for many years in direct reference both to pure phrenology as well as to craniology. He had accumulated a vast collection of skulls and casts of the brain, both of the human subject and of animals, and the result was a conviction on his part of the truth of the doctrines into which he had been inquiring.

Dr. Sewall tells us, that "in childhood the integuments of the head, and the walls of the cranium, are thin and delicate; in the adult, they are thicker; but in old age, they are again diminished in thickness." Less difficulty will, of course, be experienced in ascertaining the size and relative developement of the contained brain in young persons; the very class in whose favour it is most desirable to exercise craniological tact, and to make the application of the doctrines of phrenology.

The lecturer adds, that "there is often a great diversity in the thickness of integuments and the skull in different persons of the same age, sex, and condition, and of which we have no means of judging in the living subject." In the plates which accompany the lectures, we are presented with specimens of these differences, some of which are, indeed, sufficiently striking; but by whom, we would ask, has this fact been more pointedly stated, and examined in all its bearings, than by Dr. Gall himself, in his large work, in which he indicates modifications both of outline, figure, and substance, to which

Unequal Thickness of Skull.

the skull is subjected by the brain, before birth, from infancy to adult age, in certain diseases, as in hydrocephalus, mental alienation, &c.? This distinguished physiologist points out, also, the primary differences in the figure of the brain and cranium, and examines the question whether the form of the head can be modified either during the progress of delivery, or subsequently by forced compressions, and into the effects on the figure of the skull by the developement of particular portions of the brain. He also fully anticipated, and, indeed, stated with more fulness and distinctness than his cotemporaries and successors, the objections depending on the occasional want of parallelism of the two plates of the cranium, especially at the frontal sinuses, and the consequent embarrassment in external or cranioscopical examinations.

Respecting the varying thickness of the skull, Dr. Gall distinctly tells us, that the extent of duration may be from two lines, its customary measure, to one inch. But then he shows, what Dr. Sewall has omitted to do, that the increased thickness was, except in the case of old persons, usually morbid, and more especially evident in those afflicted with insanity and imbecility of some duration. The bones of the cranium acquired at the same time an ivory hardness. This state has been seen to exist on one side alone of the cranium. In hydrocephalus, in which the brain is so much enlarged in volume, though not increased in mass, the cranium becomes of an extreme thinness, sometimes equal to parchment.

From the whole tenor of these observations, we infer the obvious dependence of the skull, in its configuration, on the brain, and that it is moulded on this latter; becoming, in certain diseases, thickened by the recession of the inner table, so as to be kept in apposition with a diminished, shrunken, or atrophied brain; and in other cases, extremely thin by the absorption of the bony tissue from the continued pressure of the cerebral mass beneath. The principle, therefore, of the correspondence between the form of the outer surface of the brain, and of that of the outer surface of the cranium, must be considered to be fully established. The causes of embarrassment to the craniological examiner in the few cases of exception above mentioned, are but additional illustrations of the principle itself.

It will hardly be contended by Dr. Sewall, that the instances of very thick crania, such as in the case of the young female whom he mentions, and in the skulls sent by Dr. Smith, of Baltimore, are frequently met with, or that they are not exceptions to the average, which is much thinner. Putting aside, therefore, the exceptions depending upon old age and disease, in which we are either not called upon to make any cranioscopal investigation, or if we should

be, we can appreciate and make allowances for the probably increased thickness of the skull, there remains only the difficulty from want of parallelism in certain parts, as the frontal sinuses and the crucial ridge; and from there being a small space below the median line at the summit of the skull, in which runs the longitudinal sinus, and which is not filled up with brain.

The objections from these causes would be insurmountable, if the phrenologist pretended to ascertain, from the configuration and fulness of the skull, the nicer degrees of developement of each convolution of the brain. It is only the more distinct protuberances from which Gall himself drew any inference respecting the cerebral developement beneath, and the strength of the faculty depending in this latter. And although the skull in several persons may be of the same thickness, and this much greater than natural, a careful observer cannot fail to perceive marked differences in the relative fulness of certain regions—a fulness resulting from the different degrees of developement of the brain beneath. The same remark applies to the alleged concealment of the organs by the extent and thickness of the temporal muscle. Even the eye can hardly be deceived by this interposed muscular investment, so as to fail to see the varied degrees of protuberance of the adjacent skull. Still less is it probable that the sense of touch would be unable to determine what is muscular and what bony developement. If there were any uniform proportion between the muscularity of an individual, and especially between the thickness of the temporal muscle and the fulness of the skull at the regions covered by it, then would there be some force in the objections urged on this ground by Dr. Sewall. But he must have seen frequently notable protuberances on each side of the head, corresponding with the location of the different phrenological organs which he enumerates, and at the same time very little muscular developement.

Even in the regions in which, from causes already enumerated, as at the summit of the head in the line of the sagital suture, the brain is not in close apposition with the internal surface of the skull, and at the external angle of the eye, and above the superciliary ridge where there is a want of parallelism, Gall was able to detect, and to show to others, notable protuberances in certain subjects, which could only have resulted from the developement of the portions of brain beneath. In such persons, there was found an unequivocal manifestation of the faculty or faculties indicated by these protuberances.

As the author of the lectures seems to assume that anatomical authority is opposed to phrenology, and intimates that an acquaint-

ance with the former will make us sceptical in regard to the latter, we will just quote, while we think of it, the very modest remarks in a late work on the human brain, in which, to a knowledge of what has been said and written on this subject, the author, Mr. Solly, adds his own careful observations and dissections. He describes and gives plates of the nervous system of the inferior animals, and of the brains of the different classes, up to man, and scrutinises with care and caution the accounts of functions attributed to its different parts.

"The whole subject of phrenology appears to me," says Mr. Solly, "of far too much importance to be discussed without the most rigid and impartial examination of the immense body of facts adduced in support of it; and this I have not hitherto had leisure to undertake. I shall therefore only say that, so far as I am acquainted with the subject, I do not see it as otherwise than rational, and perfectly consistent with all that is known of the functions of the nervous system.'

We have now to notice a pervading error in all Dr. Sewall's reasonings on the subject of phrenology, as, indeed, in those of most of the opponents of the science. It is, to regard the brain as a unit, the whole of which "is concerned in each and every operation of the mind." This position being assumed, though it is that which phrenologists have more completely subverted than, perhaps, any other of the metaphysical dogmas of the schools, great surprise is naturally expressed, that persons with brains of equal mass and volume should exhibit such marked differences in their mental faculties; and the fact has been adduced in disproof of the doctrines of phrenology. The true state of the case, argued phrenologically, is, 1st, That the brain is a congeries of organs, each of which performs a special function, manifested by the exercise of a particular faculty of the mind. 2d, That the mental faculties are numerous, and of disproportionate power and activity. The larger the mass of which the congeries consists, the more powerful is the mind, made up as this latter is of all the faculties collectively. What holds true of the whole, is applicable to each of its parts; and hence the larger a single organ, the more powerful is its corresponding faculty. It is obvious, however, that without specification of region and organ, or organs, an annunciation of the size of the brain can give us no definite idea of the predisposition to particular modes of action or thought, or of the mental qualities in general. Thus, to tell us that a man has a large brain, simply assures us that he has certain mental faculties powerful; but whether these belong to the propensities, the lower faculties of our nature, or to the sentiments, and thus make the man a creature of strong, often passionate impulses, and of varied emotions, we cannot say. He may, or may not, be

remarkable for either vigour or variety of intellectual faculties. The intellect, although the nobler part of the mind, has a smaller portion of brain for its organic support than the other divisions of the mental faculties; and hence it may be defective, and yet the size of the brain relatively large. On the other hand, when we learn that a person has a small brain, we cannot, simply from this announcement, tell whether he is deficient in, or remarkable for, intelligence. A large head, with fully proportioned developements in all the regions, anterior as well as posterior, leaves us in no doubt of the powers of the mind of its possessor, and of his being endowed with both strong intellect and strong feelings; of his being, in fact, a man of excellent contradictory parts. But a large head, with a deficiency anteriorly, gives no promise of power; on the contrary, to the phrenologist it is evidence of deficiency of intellect. On the other hand, the collection of organs on which the exercise of the intellectual faculties depends may be present, and the organs of other faculties, in small developement; and here will be a man with a small head remarkable, perhaps, for his intellect. It is no argument against the function of the anterior lobes, through the instrumentality of which the intellectual faculties are, according to phrenology, displayed, to allege that an individual, distinguished for the variety and extent of his "native talent," had an uncommonly small brain—unless we had been informed at the same time, that, with the variety and extent of his native talent, he had also been noted for the power and energetic display of all the faculties which are represented by the phrenologists to depend on the middle and posterior lobes of the cerebrum and the cerebellum. Had we been told that the individual cited by Dr. Warren as thus distinguished, had at the same time a notable deficiency in the developement of the anterior part of his cerebrum, we should have had more cause of wonderment, and for agreeing with Dr. W. and Dr. Sewall, that this fact furnishes an objection to phrenology.

The remark of Dr. Sewall, therefore, that "if we look around upon the intellectual world, we shall find as many men distinguished for intellectual power with a head of small or medium size, and as many with a large head possessing a feeble intellect, as the reverse of these," is entirely without point, and inapplicable for his purposes. Its truth is not adverse to phrenology; it is rather a strong confirmation of the doctrines of this science. But to those who believe in the unity of the brain, it must appear to be a manifest absurdity, unless they deny that this part is at all necessary for thought and sentiment. What! that an instrument, whether it be large or small, closely knit together in its several parts, or loosely joined, (a dense

or a lax fibrous structure,) is equally fit for the offices, simple or complex, which it is known to fulfil.

Dr. Sewall, whilst he admits "that there is a difference in the natural capacities of men," is equally clear that this difference is utterly insignificant, compared with what is impressed upon the mind by circumstances.

"The influence of climate, occupation, literature, science, and the arts, commerce, war, civil and religious institutions, the state of society, and the modes of life, all exert a powerful influence upon the human intellect; but, above all, it is the discipline of the mind which gives it power."

No one can deny the power of circumstances; but it is not so great as the lecturer affirms it to be. A seed will not germinate without the "circumstances" of heat and moisture; and a plant will not bring forth leaves, flowers, and fruits, without the added circumstance of light. But we believe it will be difficult, by any possible combination of circumstances, to make a barren seed germinate, or to cause a pumpkin seed to grow into a pomegranate tree, or a cucumber seed shoot up into Indian corn. And yet, to our mind, these events would not be more strange than if, by all the circumstances enumerated, certain brains could be made to perform the higher intellectual functions, and enable their possessors to manifest genius and invention. Did "circumstances" cause the differences between the Egyptians and the Greeks, or between the Ionian Greeks and their Asiatic neighbours? In later times, wherein were the circumstances through which the followers of Mahomet from Arabia, the conquerors of Egypt, Mauritania, and Spain, so soon felt the humanising influence of letters, and extended their cultivation, and that of the arts and sciences, far beyond any other people of their time; whilst the Turks, with the same religion, also conquerors of Asia Minor, Egypt, and the remains of the Greek empire, persisted in barbarism, and up to this day are encamped, as it were, on the fairest portion of Europe, alien to her letters, her arts of usefulness and ornament, and her sciences? Are there not some other than the circumstances, either mentioned or meant by the lecturer, which can explain these differences? Need we go farther, or can we go beyond the innate differences of mental constitution and capacity?

The whole history of genius is a continued refutation of the dogma of circumstances alone, or mainly causing the differences between men in their intellectual manifestations. Where were the fostering influences of climate and situation, or the encouragement of friends and the patronage of the great, under which Linnæus, the Swede,

began and pursued his botanical studies, and acquired an enduring reputation in all the branches of natural history? Was it a favourable combination of circumstances by which Columbus, in opposition to the opinions of the learned, and amidst the coldness and indifference of princes and rulers, discovered this continent? Was Franklin indebted to circumstances for his distinction as a natural philosopher, and the reputation and influence as a politician and political economist, which he acquired in both Europe and America? But why need we multiply examples, which are nearly as numerous as the names of men of genius.

When a youth leaves his paternal farm, perhaps cot, and becomes one of the busy throng of a city in which he is a stranger, unknown, unbefriended, without wealth, or any aid or appliance but the conviction of his own powers, and works his way to honours and fame in a learned profession, or in the legislative hall, can he be said to be the favourite of circumstances?

Dr. Sewall tells us—"The intellectual, like the physical functions, acquire strength by use; and he who would attain to eminence, must subject himself to the habit of long-continued and close application to study, to deep and systematic reflection, severe investigation, and accurate analysis. These give a vigour to the mind that nature never imparts." With much truth there is mixed up no little fallacy in these opinions. The lecturer has forgotten that the greatest geniuses have ever been among the most devoted students. No obstacle has withheld them from their darling study and pursuit. Out of the wildest confusion around them, they have methodised their labours, and, undisturbed even by the din and tumult of war, they have continued their calculations and experiments. They but gratify, in so doing, a craving of their nature, a thirst for knowledge, which, though constantly ministered to, is never satiated. The mere student from imitation or vanity may accumulate a large and not unprofitable store; but unless he be quickened by genius, it will be of comparatively little avail for great and noble ends. Newton has had many to equal him in "the habit of long-continued and close application to study, to deep and systematic reflection, severe investigation, and accurate analysis." His genius impelled him to this course: others, in a spirit of imitation, and from a sense of duty, followed it; but with what result, the annals of science will show. Milton gratified his powerful mind by deep and various study: he was a poet and a student—a student rather because he was a poet, than a poet because he was a student. According to Dr. Sewall's opinion, labour imparts genius, but not genius impels to labour. Two of the most celebrated painters of Italy, Michael Angelo and

Leonardo da Vinci, and men of the greatest genius in their art, were also the most persevering students, and noted for their varied attainments. Study and attainments were here, as in the other instances mentioned, but effects, and not, as Dr. Sewall would imply, causes of their intellectual vigour and inventive faculty. Were it otherwise, every academy of art and school of science should furnish, by its mere discipline and the intentness of some of their students, a Michael Angelo and a Newton.

If men of the greatest genius have ever been among the most indefatigable students, the fact must be received as an acknowledgment of the importance, nay, absolute necessity, of diligence and labour for the accomplishment of great ends. No distinction in literature, science, or the arts, was ever yet attained without the individual submitting to these indispensable conditions. With some more happily gifted, it is a labour of love, with others, of duty; but in all, there must be a continued straining to reach the goal of their hopes and their ambition.

We find, indeed, every now and then, a particular faculty in early and active exercise, with comparatively little labour or education. This fact itself is sufficient proof of the innate power, and separate action and plurality of the faculties of the mind. But their display, isolatedly, will seldom be productive of very varied or beneficial effects, or redound much to the honour of their possessor, without study, meditation, and frequent trials.

Dr. Sewall says: "The individual who exclusively cultivates his memory, acquires a faculty of retaining facts to an extent inconceivable to those who neglect this faculty." Here is another specimen of the vagueness and inaccuracy of thought and expression into which the followers of the old school of philosophy are continually led, in treating of the mind and its attributes. Memory is not a faculty; but a modification, a mode of exercise of a faculty. There are as many kinds or varieties of memory as there are of the intellectual faculties. One person exhibits a great facility in remembering and repeating the words of a speaker or author, no matter on what subject; but often with hardly any understanding of its nature or merits. Another remembers places and objects, or a landscape which he has once seen, but has no memory for mere words. A third, again, remembers all the combinations of figures and calculations of a difficult problem in mathematics, whilst he cannot bear in mind any details of description of men or things, of history or poetry. One man will have a most tenacious memory for every thing connected with painting, whilst another will be equally retentive of musical combinations and details; and neither of the two, by any

effort of intellect, shall be able to acquire the knowledge, or display the kind of memory, of the other.

It may be alleged that, in these cases, the strength of memory is proportionate to the exclusive direction of the mind, and its intentness on one subject or series. But it will be found that the direction and intentness are the effect of the strength of a particular faculty, which naturally seeks for, or impels its possessor to seek for, its gratification, and which enables him to remember best that which gave him most pleasure.

Similar comments might be made on the remarks of the lecturer which follow the above extract, touching the success of a metaphysician who principally exercises his understanding, in arriving at a power of analysis—fancy being checked causes a neglect of judgment, &c.

An argument frequently urged in support of phrenology, is the success with which its principles have been applied to practice, in distinguishing character. To this Dr. Sewall replies, by alleging, that the same manifestations of mind, as in crime, for example, cannot grow out of the same or one unit cerebral developement; "men," says he, "of the same natural propensities perpetrate different crimes when placed under different circumstances." Doubtless they do; and the admission of the fact is the best reply to those who argue against phrenology and craniology, because every murderer has not Destructiveness large, and every thief, Acquisitiveness in excessive developement. It is not the solitary crime that proclaims the character, or even the innate propensity, of the individual, so much as a series of crimes of the like nature, persisted in, often without apparent object or common motive—as where a man repeatedly commits murder in cold blood, or systematically robs without necessity, and without regard to the application which he will make of his booty. In cases like these, we expect to find a correspondence between structure and function—between the cranial configuration and the mental manifestation. Where, also, the cerebral developement and cranial configuration are very marked in a young person, we have reason to believe that he will be prone to acts constituting the range of the function of the organ, and that if he is not restrained by suitable education and the exercise of counteracting faculties, he will habitually indulge the dominant propensity.

We agree with Dr. Sewall in exclaiming, "How preposterous, then, to look to the developements of the head as the measure of a man's virtues and vices, or even to regard his known propensities and dispositions as the true index to the history of his life." We do not, ourselves, know of any class of philosophers, phrenologists or

others, who measure a man's character by such signs, or who pretend to read in them his past history. (A tendency to, does not imply actual indulgence in, crime or passion of any kind.) A man may, and is often known to be naturally, or constiutionally, as it is sometimes termed, impetuous, impatient, choleric, prone to extreme measures, even of a violent nature, but who, nevertheless, by early and successful appeals made to his sentiments of Benevolence or of Veneration, or both, or of Conscientiousness (sense of justice), by the lessons and examples of pure morality and religion, has succeeded in keeping his erring or evil nature in subjection. But the particular tone, or colouring, as we might term it, of his character and disposition, dependent on the first mentioned causes, still remains, and can never be eradicated. Saul, at first the fierce and vindictive persecutor of the Christians, was subsequently, when enlightened and converted, and preaching and travelling as St. Paul, still warm and impassioned, but in a different guise, and with far different objects. Let elders, presbyters, deacons, and even pastors in the churches, tell of their early lives, and of their early passions, and it will be found that a phrenologist who would say, from their cerebral developements, that they evinced certain tendencies to evil, or had, for example, Combativeness, Destructiveness, or Acquisitiveness full, would not be accused by them of slander. But this person would not pretend to tell all their actual character and present conduct; any attempt to do so has been expressly disclaimed by Spurzheim, Combe, and all, we believe, of their school.

So, also, in regard to the intellectual faculties: it has never been contended that men are born painters, poets, or musicians, mathematicians or metaphysicians; nor that they have the organs of poetry, mathematics, &c. This is one of the exaggerations and fictions of anti-phrenologists. All that has been alleged by the advocates of innate faculties, and corresponding material instruments, is, that there is in some men an original aptitude for seeing and seizing the relations of various objects in nature, and of so combining them as to produce results in science and the arts of a novel and striking character, which, under the same external circumstances, others differently organised could not by any effort or labour, however long and laborious, attain.

We shall conclude with introducing a sentence of Dr. Sewall's, respecting the writers on phrenology. Earnestly do we wish that we could, with sincerity, give a like favourable opinion of the labours and success of the writers on ethics and metaphysics, whose works are the most approved in our schools and colleges. If there is truth

in their philosophy, it is yet entirely hidden from mortal ken; facts with them are not illustrations, nor are their illustrations facts.

"These writers [phrenologists] have intermingled with their doctrines so much of philosophy and truth, have introduced so many novel facts and illustrations, and have exhibited the whole subject in such an aspect, as to render the study exceedingly captivating."

ARTICLE II.

BRITISH PHRENOLOGICAL ASSOCIATION.

An association with the above name has been formed in Great Britain for the cultivation of phrenology as a science. It was first suggested by Sir George Mackenzie in the year 1835, who then drew up a prospectus for such an organisation, and stated, in a general manner, what should be its leading objects. In accordance with this suggestion, a meeting of phrenologists was held at Newcastle, in the year 1838, when a phrenological association was instituted. A committee was then appointed to prepare a code of laws, and make necessary arrangements for the future meetings and government of the association. This body met the ensuing year at Birmingham, and continued its meetings for several days, with very interesting discussions and speeches. At this meeting, officers were appointed, laws adopted, and a more perfect organisation was secured.

This association held its last meeting (September, 1840) at Glasgow, and we have just received, from a London correspondent, a large printed sheet containing a brief report of its proceedings. Mr. George Combe, president of the association, opened the meeting with an appropriate address, describing some of the leading principles and more important applications of phrenology, and detailing, at the same time, many interesting facts in the history and present state of the science. The association was in session one week; and its meetings are represented to have been attended by large and respectable audiences, of both ladies and gentlemen. Many valuable communications were made, and a new impulse given to the study and advancement of mental science. Some of the more interesting facts and items of intelligence, elicited at the several meetings of the association, we shall transfer to the pages of the Journal. As

the prospectus referred to above, drawn up by Sir George Mackenzie,—one of the first phrenologists, and ablest writers in Scotland,—contains some valuable remarks on the importance of phrenology as a science, and a statement illustrating the extensive application of its principles, we are induced to present it here entire, copied from the forty-third number of the Edinburgh Phrenological Journal. It is as follows:—

The establishment of an association for the advancement of physical science, naturally led several persons who have paid attention to the state of mental science to desire the promotion of the latter by a similar association. Whether mental science be regarded as one hardly yet in existence, or as having advanced sufficiently to enable those who have particularly attended to it to perceive that it is minutely interwoven with human conduct and human institutions, it has been too long neglected. While physical science opens up to view many proofs of the immensity of creative power, and administers to the increase of human comfort, it likewise multiplies human wants, and contributes to the useless gratification, even to the extent of abuse, of appetites which were destined not to be the guides of human conduct, but to be subservient to the higher faculties, the exercise of which alone can direct mankind to the rational use of physical discovery. The rational enjoyment to which physical science can administer, can be rendered so only by a knowledge of the real constitution of man; and such happiness as it may be permitted to us to enjoy in this world, can be attained only by searching for the relation in which man stands to his fellow-men and to external nature—in other words, for the laws which it has pleased Almighty Power to establish for that relation, and by obeying those laws as part of the Creator's will. No doubt it has been discovered that the mind is so closely connected with the body as to produce mutual influence; and to investigate this, is a branch of physiology; and thus mental science might appear capable of being connected with physical, in our present association. But, since the mental faculties have not yet been all discovered, nor those known defined with sufficient accuracy, they have to be submitted to farther metaphysical inquiry; and it seems proper, from the wide extent of the subject, that a separate association should be established. While mental science is truly one of observation, inquiry being applied in the first instance to the discovery of faculties, much discussion will be required before the definitions of discovered faculties are settled. Seeing, therefore, that this is what may be called a mixed science, and that its results are applicable to legislation, the administration of justice, political science, education, and the treatment of the insane, and, in short, to

every sublunary concern of human life, it would be improper to attach it to an association for the advancement of purely physical discovery, while its extent is ample for the full employment of a separate one.

The immense importance of mental science to mankind has been overlooked, because for a very long period no discovery of any importance had been made in it. Philosophers had speculated only on their own individual consciousness, and had made themselves standards for the whole human race, neglecting, or setting aside as not worthy of regard, the marked differences of human talent and character. Attention has been attracted to physical science, because discoveries were, to all appearance, more easily made, and every discovery opened the field still wider, so that every one found a range for his prevailing talent. Physiologists, however, have at last withdrawn the veil which had obscured and rendered uninviting the track of those who had embarked on the ocean of metaphysics, without a single fact to serve as a pilot.

Enough has been said to introduce what is proposed to be the manner of proceeding. As soon as a sufficient number of persons shall have announced their desire to be members, a general meeting will be held at such time and place as may appear convenient, at which officers will be selected, and rules for future government enacted. And, if they can be procured, reports will be read on the following subjects:—

1. On the present state of mental science.
2. On the present state of our knowledge of the causes of insanity, idiocy, and other aberrations of the faculties.
3. On the present state of the criminal law, in reference to the mode of trial and punishment, and as applicable to the human faculties.
4. On the present mode of administering justice in civil cases.
5. On the present state of education.
6. On the present state of political science.
7. On the present customs and usages of society, as affecting the faculties.

It is proposed that the inquiries to be instituted shall be remitted to different committees or sections, as follows:—

1. Enumeration and analysis of the human faculties; the physiology of the brain; the causes of difference in human talent and character; hereditary influences.
2. Education, in reference to health, and the discipline of the animal, intellectual, and moral faculties; the customs and usages of society, in reference to their influence on the human constitution.

3. Civil and criminal legislation; the relations of man to external things.

4. Political economy; colonisation; in reference to the moral faculties.

ARTICLE III.

CHARACTER OF COLUMBUS.

The most remarkable event of the fifteenth century was the discovery of the new world. The vast results of that discovery, and its important bearing upon the welfare of our race, have long made it the true epoch of the age. Compared with it, all the regal splendour of Ferdinand and Isabella, all their proud achievements—the expulsion of the Jews and the conquest of Granada—sink into insignificance. By far the most extraordinary man of those times—he whose genius conceived, and whose matchless energy accomplished, the lofty enterprise which shed so much glory around the Spanish throne, and rendered the reign of its monarch far more illustrious than could a thousand victories—was Christopher Columbus.

In the character of such a man, there must needs be much to impress even a casual reader, seeking only amusement to beguile a weary hour. For the more profound student of history, who loves to trace all events to their source, and estimate the wonderful influence of individual genius upon the destiny of nations, it possesses yet greater charms. And for the phrenologist, who delights to observe and reflect upon the operations of mind, in every age and country, and under every possible influence—to mark the fierce struggle between inborn energy of soul and the strong force of factitious circumstances—to see in the victory almost invariably achieved by the former, confirmatory evidence of the truth of his science—it has, indeed, peculiar attractions, and is full of deep and lasting interest. The following notice of his person, is from Irving's admirable biography. "Columbus arrived at Lisbon about the year 1470. He was at that time in the full vigour of manhood, and of an engaging presence. He was tall, well formed, muscular, and of an elevated and dignified demeanour. His visage was long, and neither full nor meagre; his complexion fair and freckled, and inclined to ruddy; his nose aquiline; his cheek bones were rather high; his eyes light gray, and apt to enkindle; his whole countenance had an

air of authority. His hair, in his youthful days, was of a light colour, but care and trouble, according to Las Casas, soon turned it gray; and at thirty years of age it was quite white."

We cannot but regret that the elegant historian has in this description omitted the most important feature of all, and made no mention of the *head* of Columbus, or only noticed it incidentally. We would have been pleased with a finished portrait from his graceful and graphic pen. Many might have sat for the above picture, but few for the *head* of the great navigator. So, at least, we must believe, judging from the character of the man, and from the fine old engraving before us. We are so accustomed to look at all portraits phrenologically, that our eye instinctively rests upon the forehead. This is so striking and every way remarkable, that the most indifferent observer would soon pass over the general features of the face —the well formed nose—the firm and compressed lip, and the air of conscious power cast over all—and dwell exclusively upon the deep, clear, and expanded brow. The thoughtful introspective eyes might for a moment arrest us, but they evidently derive their chief expression from those instruments of thought which swell out between the temples. As a whole, the head is rather long and high, showing large intellectual and moral organs. It has not the breadth of brow, and expansion at the sides, which we see in the likenesses of Milton and Shakspeare. The difference is of course owing to the greater Ideality of the two masters of song.

Franklin's Head

In its general appearance, his head bears no small resemblance to that of Franklin. Both are distinguished by great size, as well as great Causality. In both, Firmness and Self-esteem are prominently marked; while in neither is Ideality much above the average developement. In several other points, the likeness, in their phrenological conditions, is very striking. Nor is the correspondence in the lives and characters of these extraordinary men much less remarkable. Although neither of them could boast of his family, or vaunt the deeds of his ancestors, both lived to render their names illustrious. The youth and early manhood of both were passed amid poverty and privation. But not want, with all its concomitant evils, truly termed the imprisonment of mind, could reconcile either to ignorance. The journeyman printer and the humble map maker were as eager in their pursuit of knowledge as the most aspiring youth, born to lofty hopes, surrounded with flattering incitements, and cheered onward, at every step of his career, by the plaudits of fond and exulting friends.

Columbus was no genius, in the common acceptation of the word. His peculiar excellence lies neither in the variety nor the depth of

his knowledge; not so much in any particular art or science, for even in his favourite pursuits, geometry and cosmography, he was equalled, and perhaps surpassed, by many of his cotemporaries. Yet was he unquestionably a great man, and great because of his capacious intellect. Take away, then, from his brain the phrenological condition of size, by which it was so eminently distinguished, diminish the organs of Causality and Comparison, and the discoverer of the new world dwindles into an ordinary man, and sinks to the level of the herd. As suddenly dwarfed in his huge stature, as were the fallen angels on entering pandemonium.

But the student of nature, confident in her consistency, and in her unvarying laws, is well assured that those important conditions did, in fact, exist in the organisation of the ancient mariner, although he could find no evidence of the truth, either in any portraits of him, or in the descriptions of his historians. He is, indeed, as firmly convinced of it, as was Columbus himself of the existence of the unknown world he once could not descry, but which he at length discovered. And he is convinced by means of the same severe, but yet much more cautious and unerring, *induction*.

The moral organs, as we have intimated, were large—Benevolence, Veneration, and Marvellousness, are greatly developed. These faculties would at first sight appear to have little influence in forming his character and inspiring his actions. But without them, it would be incomplete. It is the peculiar beauty and excellence of the phrenological analysis, that it has omitted in its classification no instinct, no sentiment, no intellectual power that can possibly enter into the nature of man, or naturally affect his conduct. And herein appears its very great superiority over every other system of mental philosophy, showing it is indeed what it professes to be, a true interpreter of nature, and expounder of the mysteries of mind.

"When Columbus," says Irving, "had formed his theory, it is singular the firmness with which it became fixed in his mind, and the effect it produced upon his character and conduct. He never spoke in doubt or hesitation, but with as much certainty as if his eyes had beheld the promised land. A deep religious sentiment mingled with his meditations, and gave them, at times, a tinge of superstition, but it was of a sublime and lofty kind. He looked upon himself as standing in the hand of Heaven, chosen from among men for the acomplishment of its high purpose. He read, as he supposed, his contemplated discovery foretold in Holy Writ, and shadowed forth darkly in the mystic revelations of the prophets. The ends of the earth were to be brought together, and all nations, and tongues, and languages, united under the banners of the

Redeemer." It is not our design to dwell in detail upon the developement of each separate organ, but we cannot refrain from selecting the two primitive faculties of Hope and Firmness for a passing remark. They enter into his character as essential ingredients, absolutely necessary to form and complete it, and fit it for the accomplishment of its great destiny. By means of his intellectual faculties, his vast schemes could have been conceived and matured, but without Hope and Firmness in unusual developement, those schemes would never have been realised in his own person. They would have been left at last for some more determined spirit to achieve. Disgusted and sickened with hopeless delay and repeated rebuffs, he would have returned with indignation from a world that refused to be benefited by his services, have buried his disappointment in some cloister, and consumed the remainder of his days in bitter and unavailing regrets. "Let those," says his biographer, "who are disposed to faint under difficulties in the prosecution of any great and worthy undertaking, remember that eighteen years elapsed after the time that Columbus conceived his enterprise, before he was enabled to carry it into effect; that most of that time was passed in almost hopeless solicitation—amidst poverty, neglect, and taunting ridicule; that the prime of his life had wasted away in the struggle, and that when his perseverance was finally crowned with success, he was about his fifty-sixth year. His example should encourage the enterprising never to despair."

In reflecting upon the reception which the grand theory of Columbus met with from the learned of his day, the phrenologist may be excused for comparing it with the very similar treatment experienced by Gall, at a much more advanced stage of civilisation, in an age proud of its superiority over all other times, in wisdom, in love of science, in devotion to the cause of truth, constantly proclaiming its great liberality, and especially its singular freedom from all religious bigotry and scholastic prejudice.

W.

ARTICLE IV.

ON THE HARMONY BETWEEN PHRENOLOGY AND CHRISTIANITY.*

The relation between Christianity and phrenology appears to us to be the following. The communications of the Bible may be divided into two great classes: the one relating to matters which the human intellect could never, by its own powers, have discovered; and the other consisting of descriptions of beings which exist in this world, and of rules of duty to be observed by those beings—which rules and beings appear to be subjected to the examination of every ordinary understanding. To the former class belong the character and offices of Jesus Christ, and the state of man after death; and in the latter are comprehended human nature such as it now exists, and all moral and religious duties which bear relation to human happiness in this world.

The Calvinist, Arminian, and Unitarian, entertain views widely different regarding the character and offices of Jesus Christ. On such subjects phrenology can throw no light whatever, and therefore it would be unphilosophical to mix up a discussion of the one with a treatise on the other; and this observation is equally applicable to every announcement contained in the Bible regarding matters which are not permanent portions of ordinary nature.

The Bible, however, contains numerous descriptions of human nature, and numerous rules for the guidance of human conduct; all of which may be compared with the constitution of the mind as it is revealed to us by observation, and with the inferences which may be drawn from that constitution concerning its most becoming and advantageous modes of action. The result of this comparison appears to us to establish the harmony between phrenology and the representations of Scripture on the points alluded to. But let us come to details:

We are informed in Matthew's Gospel (xv. 19), that "out of the heart" (clearly meaning the mind) "proceed evil thoughts, murders, adulteries, fornications, thefts, false witness, blasphemies;" and statements essentially to the same effect are made in the Epistles of St. Paul to the Romans (i. 29–31), and to the Galatians (v. 19–21). Now, according to phrenology, excessive and irregular action of

* The above article is the substance of a review (in the forty-fourth number of the Edinburgh Phrenological Journal) of three lectures, by Rev. Henry Clarke, of Dundee, on the Teachings of the New Testament respecting the Animal, Moral, and Intellectual Nature of Man.—Ed.

various faculties produces evil thoughts; an abuse of Destructiveness occasions murder; an abuse of Amativeness gives rise to adulteries and fornications; an abuse of Acquisitiveness produces thefts; an abuse of Secretiveness leads to falsehood; and an abuse of Destructiveness and Self-esteem is the origin of blasphemies.

Here, then, is a striking accordance; and the harmony will be more fully appreciated if we put the faculties enumerated by Mr. Dugald Stewart to the test of a similar constrast. Mr. Stewart's "active and moral powers" are the following:—

I. Appetites.—Hunger; thirst; appetite of sex.

II. Desires.—The desire of knowledge; of society; of esteem; of power; of superiority.

III. Affections.—Parental and filial affection; affections of kindred; love; friendship; patriotism; universal benevolence; gratitude; piety.

Malevolent Affections.—"The names which are given to these in common discourse," says Mr. Stewart, "are various:—habit; jealousy; envy; revenge; misanthropy. But," continues he, "it may be doubted if there be *any* principle of this kind implanted by nature in the mind, excepting the principle of resentment; the others being grafted on this stock by our erroneous opinions and criminal habits."

IV. Self-love.

V. The Moral Faculty.

VI. Principles which co-operate with our Moral Powers in their influence on Conduct: viz. decency, or regard to character; sympathy; the sense of the ridiculous; and taste.

These faculties, then, joined with intellect, compose the human mind, according to Mr. Stewart; and it will be found much more difficult to account, by means of his single malevolent affection of resentment, or the abuse of any of the other powers enumerated by him, for such actions as those mentioned in the quotation from St. Matthew, or as we see daily around us.

Secondly, Christ says, in the Gospel of St. Luke, that "every tree is known by its own fruit: for of thorns men do not gather figs, nor of a bramble-bush gather they grapes. A good man, out of the good treasure of his heart, bringeth forth that which is good; and an evil man, out of the evil treasure of his heart, bringeth forth that which is evil; for of the abundance of the heart his mouth speaketh." (Luke vi. 44, 45.) And in Matthew's gospel, he counsels his followers thus: "Let your light so shine before men, that they may see your good works, and glorify your Father which is in heaven;" and again, "I am not come to call the righteous, but sinners to

repentance." (Matt. v. 16; ix. 13.) Of Nathanael he said, "Behold an Israelite indeed, in whom is no guile." (John i. 47.) Explaining the parable of the sower, he uses the following words: "But that on the good ground are they which, in an honest and good heart, having heard the word, keep it, and bring forth fruit with patience." (Luke viii. 15.) And in the parable of the lost sheep,—"I say unto you, that likewise joy shall be in heaven over one sinner that repenteth, more than over ninety-and-nine just persons, which need no repentance." (Luke xv. 7.) Of Zacharias and his wife Elizabeth we are told, that "they were both righteous before God, walking in all the commandments and ordinances of the Lord, blameless." (Luke i. 6.) And the apostle says, "Follow righteousness, faith, charity, peace, with them that call on the Lord out of a pure heart." (2 Tim. ii. 22.) And again: "Unto the pure, all things are pure." (Titus i. 15.) Thus, also, the Psalmist says: "For thou, Lord, wilt bless the righteous; with favour wilt thou compass him as with a shield." (v. 12.) "Oh let the wickedness of the wicked come to an end, but establish the just." (vii. 9.) "With the merciful thou wilt show thyself merciful, with an upright man thou wilt show thyself upright. With the pure thou wilt show thyself pure, and with the froward thou wilt show thyself froward." (xviii. 25, 26.) Finally: "Mark the perfect man, and behold the upright; for the end of that man is peace." (xxxvii. 37.) See also Psalms i. 1, 2; xv.; xxxii. 11; xxxiii. 15; xxxvii. 16, 17; xcvii. 10–12; cxii.; cxxviii.

Thus it is abundantly evident, that while the human mind is represented in Scripture as liable to commit every species of wickedness, it is at the same time spoken of as possessing moral qualities of a pure and exalted description: "A good man," we are expressly told, "*out of the good treasure of his heart*, bringeth forth that which is good." Now, phrenology shows us that although the mind is endowed with strong animal propensities, which are, in the majority of individuals, prone to rush into abuse, yet it has received also various moral powers—Benevolence, Veneration, and Conscientiousness. This system of philosophy, therefore, in representing human nature as possessing excellent and amiable qualities, is also in harmony with Scripture.

In the third place, St. Paul, in his Epistle to the Romans, argues, that "when the Gentiles, which have not the law, do by nature the things contained in the law, these, having not the law, are a law unto themselves; which show the work of the law written in their hearts, their conscience also bearing witness, and their thoughts the meanwhile accusing, or else excusing, one another." (Rom. ii. 14, 15.) It will be recollected that the two classes of faculties, the propensities

and moral sentiments, do not appear to the understanding to possess the same excellence and authority, but that we are instinctively conscious that the latter class is of a higher order, and has been framed by nature to govern the former; and that it is from the dictates of the moral sentiments that our natural notions of duty begin. Now this is precisely, out and out, the doctrine of St. Paul. The Gentiles were endowed by nature with Benevolence, Conscientiousness, Veneration, and intellect; their intellect, on comparing the irregular and excessive manifestations of the animal propensities with the dictates of the moral sentiments, perceived the opposition between them, and instantly their minds stood convicted of offending against a law of morality written in their hearts.

In the fourth place, we are taught in the Bible that God has given different talents to different individuals; to one five talents, to another two, and to another one, and that each shall be accountable only for that which he hath. (See Matt. xxv. 14–30; also, Rom. xii. 6, 7, 8; 1 Peter iv. 10, 11; 1 Cor. iv. 7; vii. 7.) It is impossible to look at the cerebral developements, either animal, moral, or intellectual, of any two individuals, and not be convinced that Scripture and phrenology precisely coincide in this view of human nature; and here, also, while phrenology accords with the Bible, many of the other systems of mental philosophy stand in opposition to it: for not a few philosophers maintain that all men are created with equal talents; and even those who admit a difference, merely state the fact, and do not point out the nature, the causes, or the extent of the variety apparent in the capacities and dispositions of individuals—which phrenology makes palpable even to the senses.

Finally, St. Paul observes, "I know that in me (that is, in my flesh) dwelleth no good thing: for to will is present with me; but how to perform that which is good, I find not. For the good that I would, I do not; but the evil which I would not, that I do. Now, if I do that I would not, it is no more I that do it, but sin that dwelleth in me. I find then a law that, when I would do good, evil is present with me. For I delight in the law of God after the inward man. But I see another law in my members warring against the law of my mind, and bringing me into captivity to the law of sin, which is in my members." (Rom. vii. 18–23.) And again, in the Epistle to the Galatians (v. 17): "For the flesh lusteth against the spirit, and the spirit against the flesh; and these are contrary the one to the other; so that ye cannot do the things that ye would. But if ye be led by the spirit, ye are not under the law. Now, the works of the flesh are manifest; which are these: adultery, fornication, uncleanliness, lasciviousness, idolatry, witchcraft, hatred, variance, emula-

tions, wrath, strife, seditions, heresies, envyings, murders, drunkenness, revellings, and such like; of the which I tell you before, as I have also told you in time past, that they which do such things shall not inherit the kingdom of God. But the fruit of the spirit is love, joy, peace, long-suffering, gentleness, goodness, faith, meekness, temperance; against such there is no law." St. Paul is here speaking of his own experience as an individual; and his description of himself is exactly in accordance with that of one class of characters with which phrenology makes us acquainted—namely, those in whom large organs of the animal propensities are combined with large organs of the moral sentiments and an active temperament. The history of St. Paul's life shows that he belonged to this class. His original conduct in relation to Christianity was "breathing out threatenings and slaughter against the disciples of the Lord:" he "made havoc of the church, entering into every house, and hauling men and women, committed them to prison." (Acts vi. 3; ix. 1.) At this period the propensities held the ascendency. After his conversion, he continued to feel the solicitations of those feelings in the manner forcibly described in the passages just quoted from his epistles; but he no longer yielded to their abuses. The moral sentiments, under the influence of altered views, had now assumed the supremacy. It will be remarked that he distinctly recognises the action of both sets of faculties within his own mind: "I delight," says he, "in the law of God, *after the inward man;* but I see *another law in my members warring against the law of my mind*, and bringing me into captivity to the law of sin, which is in my members." We are aware that some divines construe the "spirit" mentioned in the verses quoted from the Epistle to the Gallatians, to mean the spirit of God, as contradistinguished from human nature; but it appears to us that such an interpretation is not only unwarranted, but inconsistent with the words just cited in italics, where both "laws" are spoken of as equally inherent in Paul's nature; and that the apostle, in speaking of "the spirit" in opposition to "the flesh," allude to the moral and religious sentiments of the human mind, as contradistinguished from the animal propensities. The works of the flesh above described by St. Paul, are, without exception, abuses of one or several of the faculties. He describes, also, "the fruit of the spirit," which is "love, joy, peace, long-suffering, gentleness, goodness, faith, meekness, temperance;" and every one of these, it will be observed, is a legitimate action of the moral sentiments and intellect. He says, most truly, that "against such there is no law." Certainly none—because the moral sentiments are the

ruling powers, and their dictates, when enlightened by intellect, are supreme.

Similar views are eloquently expounded by Mr. Clarke, in the lectures of which the title is copied at the commencement of the present article. We are happy to see phrenology finding its way into the pulpit, and cannot entertain a doubt that, were clergyman in general to call in the aid of physical science and philosophy to illustrate and support the truths of religion, they would soon perceive a decided augmentation of the interest excited, and instruction communicated, by their discourses.

Mr. Clarke has prefixed to his lectures a table of the phrenological organs, divided into three columns: the first containing the names and uses of the organs; the second, their abuses; and the third, the effects of their deficiency. And he adds the remark, that "if the first column be read from top to bottom through the whole table, it will be seen that the uses of the organs are all good—highly important—absolutely necessary; but if the second column be read in the same manner, it will be perceived that the abuses of the organs produce all the crimes known among men; while reading the third column wholly by itself, will show that deficient organs, even those that may be most awfully misapplied, are by no means to be desired. The deficiency would not be an improvement. . . . . By looking at the uses and abuses of Veneration, Hope, and Wonder, it will be found that they may either exalt to high-toned religion, or debase to grovelling superstition—belief in prodigies, magic, ghosts, and all kinds of absurdities; and even Conscientiousness may, when joined with these in its abused state, aid the delusion and swell the evils. The *abuses* of the organs only are sins; and from these sins the majority of human miseries flow. To use the organs aright, is of course to avoid transgression and to escape suffering; and this, again, is to be virtuous and happy."

In the first lecture, Mr. Clarke shows that Christ and his apostles teach that man has animal propensities, from which chiefly sin has its origin; that these are alluded to as powers in themselves, both necessary and good; that, according to the Christian Scriptures, they may be kept within the limits of virtue and religion; that man is to be rendered religious, not by their destruction, but by directing them aright; and that human nature is by no means the mass of unmingled degradation which it is so frequently represented to be.

"Both Christianity and phrenology," says he, "forbid us to view man's nature as a mixture of brute and demon. They who are become half brute half demon, are said to be 'without natural

affection,' and to be 'given up to vile affections.' 'As they did not like to retain God in their knowledge, God gave them over to a reprobate mind, to do those things which are not convenient; being filled with all unrighteousness.' They are 'men of corrupt minds.' They are in an unnatural state. They are degraded, debased, and 'gone out of the way.' But while we may point to them as melancholy proofs of what human beings may become, we must not point to them as evidences of what human nature, in its essence and constitution, is. We might as justly adduce Socrates, Newton, and Howard, as proofs that the nature of every man is wise, and good, and great, as hold up Nero, King Henry the Eighth, and Judge Jeffreys, as evidences that the nature of every man is base, cruel, and depraved. To place the crimes of men to the account of an uncontrollably sinful nature, is to exculpate them from blame. It is more: it is asserting that man is unimprovable. It is condemning all plans and attempts which aim at exalting the human mind. It is pronouncing all human means unavailing to elevate the human character. It is representing a human being as too worthless, despicable, and vile, to be the object of virtuous affection. Let man be the loathsome reptile that he is sometimes supposed, and he is unworthy of regard, undeserving of respect, and utterly destitute of any claims upon the laws of benevolence and truth. Then, duty to each other men cannot owe. Beings who were compounded of only brute propensities and demon hate, worked up to a nature radically and universally depraved, must invariably act as demon-brutes. But is this the case? Are our social, scientific, charitable, and religious institutions, proofs that we are demon-brutes? Whenever a man sincerely laments that the human race is nothing but beast and demon, his own lament demonstrates that his views are false. He is not himself a demon-beast; for if he were, no such lamentation could escape him.

"Does the tiger lament his own fierceness, or the serpent mourn over his degradation and poison? And as impossible would it be for man—for any man—to sigh for human nature, if the nature of every human being were brutified and demonised. The good man's sighs over sin, prove that he is not all sin. Man has, indeed, an animal nature, but he has also an intellectual nature. When the former absorbs the latter—when the mind, or soul, is swallowed up in mere sense—then truly man becomes an awful offender. His enormities are terrible. He would then disgrace the beasts, and perhaps even dishonour demons. But when the animal part of man is purified by man's moral sentiments, and absorbed by his intellectual faculties, then is it manifest that there is a noble 'spirit in man, and the

inspiration of the Almighty giveth him understanding.' 'His deeds then are wrought in the love of God and man.' 'He then evinceth the same mind which was also in Christ;' and then he gives forth evidence that 'God hath made him but a little lower than the angels, and hath crowned him with glory and honour.'"

The second lecture is devoted to the moral sentiments, regarding which the teachings of phrenology and Christianity are thus compared. "The one teaches that there are certain natural moral sentiments, which are elementary constituents of the human mind; the other appeals to these sentiments as to things which actually exist in man. By one it is asserted that these sentiments, rightly directed, will lead to the discharge of individual, relative, and religious duties; by the other it is affirmed that man must employ those powers to do as he would be done unto—to serve his God, and to work out his salvation. One system teaches that human beings are constituted moral agents; the other treats them as such. Every page of man's history proves his possession of those moral powers. Every page of the New Testament addresses itself to them. Too often have they been most wofully neglected, misapplied, enfeebled, and debased. But was there ever upon earth a people devoid of the sentiments of right and wrong, honour and dishonour? Did ever a people exist, who evinced no sentiments of wonder and veneration towards things stupendous, and a power superhuman? The religion of the most superstitious is evidence of some natural powers in man, which prompt to the adoration of superior objects; the grossest idolatry must be the effect of some mental cause. What is it? From the animal propensities alone it could not possibly proceed. Were man reduced to the condition of the ourang-outang, he would not then be a worshipper of even an idol. Paganism, under its most disgusting forms, still points up to mental powers, which in their nature must be good and noble, and in their designed use most salutary. The worshippers of Boodh, in India—of Foe, in China—and of Lama, in Thibet, evince the very same mental sentiments as those which are manifested by the worshippers of the only true God. Only change the object of worship, and the truth of this position will be demonstrated. The inhabitants of India, China, and Thibet, might worship the Christian's God without undergoing a change of nature; and any people might exchange an inferior code of morals and religion for one that was better, without exchanging a single power of the mind for some other."

Mr. Clarke has included among the moral sentiments, Self-esteem, Love of Approbation, and Cautiousness; "because," says he, "they have in their uses a decided moral tendency." Self-esteem he

regards as "the basis of all true honour, dignity, and moral greatness," and as "that which exalts the mind above meanness, servility, and baseness." We suspect that few of our readers will here concur with Mr. Clarke; for humility, which is the only result of deficient Self-esteem, is neither inconsistent with "true honour, dignity, and moral greatness," nor necessarily accompanied by "meanness, servility, and baseness." When directed by higher faculties, Self-esteem, Love of Approbation, and Cautiousness, have doubtless, like every other mental power, "a moral tendency;" but still, in themselves, they have no tincture of morality. Indeed, we have long been much inclined to the opinion that the received list of "moral sentiments" is far too extensive; and that Benevolence, Veneration, and Conscientiousness, are the only affective faculties which exercise a disinterested control over the animal powers. So far as we are able to perceive, neither Hope, nor Wonder, nor Wit, nor Firmness, nor Imitation, exercises any such control; and even Ideality can hardly be looked upon as a barrier in the way of selfish indulgence, at the expense, or to the annoyance or disregard of other men. Every one of the six faculties last named, may be so harmoniously leagued with the propensities, as to start no objection whatever to the performance of the most immoral acts.

In the third and concluding lecture, Mr. Clarke treats of the human intellect, and the necessity of cultivating and enlightening it before Christianity can be fully realised. "As the intellectual faculties," says he, "are the only media of access to the moral sentiments, and the moral sentiments are the only instruments by which the animal propensities can be duly restrained and beneficially directed, virtue, piety, and true religion, must be in proportion to the strength, activity, and harmonious co-operation of the intellect and moral powers. It has been said, that 'ignorance is the mother of devotion.' But of what devotion? Can ignorance produce the devotion of the wrapt-ennobled soul? Can it send forth the devotion of Christ? No. The devotion of ignorance is low, grovelling, superstitious; it is mere fear, tinctured deeply with the dark colouring which the animal nature has given it. It is false devotion. That which is true, is ever brightened highly by the glowing tints that the combined energies of the intellect and moral powers have impressed upon it. There is no beauty in the devotion which is the offspring of ignorance; its parentage is base; the issue is of but little worth; too often has it proved worse than worthless. It has led men to fanaticism and persecution—to the commission of the most atrocious crimes, and the infliction upon themselves and others of the direst miseries. It has given the name of religion to that which

was positive madness. But such insanity was never produced by hearing the Word and understanding it, and receiving the good seed into the good ground of the mind. Thirty, sixty, or a hundred fold of bigotry, anger, wrath, and malice, are the very counterpart of those fruits of love, and joy, and peace, that the religion of Jesus is designed to produce; and 'by their fruits shall ye know them.' 'If a man hath not the spirit of Christ, he is none of his.' But to know what that spirit was, requires the exercise of both the perceiving and reflecting powers. The fundamental command, 'Learn of me,' cannot be obeyed without a vigorous use of the intellectual faculties; but the more carefully these are trained, and the more assiduously the moral sentiments are at the same time cultivated, the higher must the individual ascend in excellence, true religion, and positive enjoyment."

ARTICLE V.

REPORT OF AN OPERATION FOR THE REMOVAL OF A LARGE BONY TUMOUR, CALLED "SPINA VENTOSA OF THE SKULL."

BY GEORGE M'CLELLAN, M. D.

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[The following cut is introduced for the purpose of illustrating one of the most interesting cases that has ever occurred in the history of surgery. As it involves facts which have an important bearing upon a correct knowledge of the functions of the brain, we have taken some pains to obtain a full and accurate account of the particulars in the case. This engraving is carefully drawn from the bust of an individual who, about two years since, underwent, in this city, a most severe surgical operation for the removal of a large bony tumour upon the vertex of the head. The cut represents very correctly the cicatrix of this tumour, the operation for the removal of which was performed by Dr. George M'Clellan, whose skill and success in surgery is certainly not surpassed by any other surgeon in the United States. What is most interesting and important in this case, is the peculiar and marked change that occurred in the character of the individual soon after the operation. The following communication, describing clearly and minutely the facts in the case, has been kindly furnished us by Dr. M'Clellan, and cannot fail to interest every reader.—Ed.]

Case

Early in the month of December, 1838, Thomas Richardson, a resident of the city of Pittsburg, called on me for surgical aid. He was then twenty-two years of age, and had been afflicted about three years with a tumour upon the vertex of his skull. About six months before the first appearance of the tumour, he received a severe blow from a missile on the affected region, after which he occasionally experienced tenderness and pain there. As the tumour gradually increased, it produced a determination of blood to the head, attended with a sense of fullness and a giddiness on stooping. But he was not deprived of any intellectual power; nor were any of his sensations or muscular actions disturbed.

The tumour was very hard and unyielding, and had been pronounced to be an *exostosis* by every surgeon who had examined it. It was oblong in shape, being four inches in the long, and three and one-fourth in the short diameter. It was raised in the centre about one and three-fourth inches above the surrounding portions of the outer table of the skull, and extended from about an inch beyond the sagittal suture on the right side obliquely to the left, and backwards over the adjacent portion of the left parietal bone. It occupied, phrenologically, the organs of Firmness, Self-esteem, Approbativeness, and a part of Cautiousness, on the left side.

I was induced to undertake an operation for extirpating this tumour, chiefly because no symptoms of cerebral affection could be discovered other than those which a moderate determination of blood to the head might produce. Two long incisions were first made at right angles near the centre of the swelling, and afterwards the scalp was dissected up from the whole surface, and to some extent, around the sound bones. With a long narrow saw, held in a tangent to that portion of the circumference of the cranium, I then cut off the entire tumour, apparently at its base. The saw moved with difficulty while it was passing through the external table, but with great ease when it was acting upon the interior of the mass. This first led to the suspicion that the disease was not an *exostosis;* and when the prominence had been removed, it was made evident that a far worse state of things had to be encountered. The exposed surface presented perpendicular cells, or cavities, like those of a honeycomb, which were filled with a bloody, or pulpy and sanious matter. The case was at once decided to be a *spina ventosa* of the skull, and it was therefore deemed necessary to extract the whole mass from the surface of the dura-mater beneath. A long and tedious extension of the operation was then undertaken. The whole mass of the tumour was circumscribed by the circular edge of a small Hays's saw, and the mass was pried out in successive fragments by an elevator, occasionally aided by the bone nippers and forceps. This part of the operation proved exceedingly difficult, for the tumour extended inwards much deeper below the internal table, than its outer surface had risen above the external table of the skull. Finally, however, a removal of the whole morbid structure was effected, and the dura-mater was exposed, thin and livid in appearance, at the bottom of a deep cavity which the bystanders estimated to be capable of holding four and one-half ounces of water. There were no pulsations visible, although the circulation was strong and full. Some small spiculæ of bone adhered to the dura-mater, which were extracted by the aid of forceps. In extracting the last of these, which appeared to penetrate the dura-mater, a prodigious gush of venous blood issued, after which the patient fell into a convulsive syncope. The hemorrhage was supposed to proceed from the longitudinal sinus, and was therefore arrested by graduated compresses and a bandage. The angles of the wound were brought as near together as possible over the compresses, for the purpose of affording support to them while they were confined by the bandages. Very little irritation resulted from this operation.

In nine days, the compresses were loosened by suppuration, and on removing them, the whole of the exposed surface was found to

be granulating, and the orifice in the great sinus was closed. But the brain had not risen up to occupy the exposed cavity; and it was found impossible to place the flaps of the scalp in contact with the dura-mater in the usual way, so as to close the wound. Mild dressings of patent lint were applied over the surface, and confined with moderate pressure by means of a double-headed roller. On the twelfth day after the operation, the cavity below the bone was evidently diminished, and every day thereafter it continued to decrease, until, in the fourth week, the surface of the brain covered by the granulating dura-mater had risen up to the level of the inner table. The natural pulsatory motions did not appear, however, until the cavity was nearly filled; and, in the mean time, forcible pressure could be made on the surface of the brain without exciting any degree of stupor or inconvenience on the part of the patient. But as soon as the pulsations began to appear, every kind of pressure proved irritating to the brain. At the same time, a remarkable change took place in the character and bearing of the patient. He then became exceedingly timid and irresolute. It would render him pale and almost pulseless to approach him with a pair of scissors for the purpose of trimming away his hair from the margins of the wound; and the sight of a piece of lunar caustic, or a pair of forceps, in the surgeon's hands, would throw him into great trepidation. This state of his mental faculties continued for a long period after his complete recovery from the wound. He could not even go down into a cellar containing some plaster busts, without a sense of faintness and sinking; and the operation of taking a cast of his head in plaster, nearly prostrated all the functions of his mind and body. His carriage also became remarkably affected. Instead of maintaining his natural erect posture and bearing, he sunk his head and shoulders into an awkward stoop, and looked timidly and anxiously forward, as if he was afraid of blundering against a door-post.

At the time of the operation, and until the pulsations of the exposed portion of his brain returned, he was remarkable for his firmness of mind and resolution. No patient ever bore a severe and protracted operation with more intrepidity. He sat upright in a chair, without any confinement, until the blood-vessel gave way at the close of the operation; and during its performance, he repeatedly inquired of the bystanders if it was the brain which was coming out under the efforts of the surgeon. It has been, moreover, stated by those who have known him well for years, that previous to this injury he had always been distinguished for his firmness, courage, and independence.

He is now (two years after the operation) living in perfect health

at the Exchange Hotel, Pittsburg. He is engaged in active business, and is entirely exempt from any symptom of a return of the disease. His former firmness and intrepidity of mind have been gradually returning for a year past, and at present no departure from a healthy condition of mind or body can be discovered. A thickening or induration of the flaps of the scalp, which resulted from their long exposure and separation from the subjacent dura-mater, and which at one period gave origin to a report that the disease had reappeared, has become entirely softened down, and attenuated by the natural process of absorption.

As this case occurred during the period of Mr. Combe's first course of lectures in Philadelphia, it excited great attention among all phrenologists. One of the gentlemen who attended the operation, addressed a letter to Mr. Combe, stating that both organs of Firmness were lost or destroyed; and asked for an explanation of the apparent contradiction in the conduct of the patient to the principles of phrenology. Mr. Combe read this letter publicly to his class, and endeavoured to explain away the difficulty, by locating the position of the tumour posteriorly to the organs of Firmness. On a further, and subsequent examination of the wound, however, he decided that a great portion of the skull, over the region of Firmness, had been removed, together with that of several of the neighbouring organs, as I have enumerated them.

In no respect, however, does this case militate against the principles of phrenology. The organs, instead of being destroyed, were merely displaced or depressed by the growth of the tumour, in the same way that deformities are produced in some of the savage tribes by gradual pressure of the skull. Perhaps a better analogy may be drawn between the state of these organs and the parts of the brain pressed upon by internal effusions of blood, and depressed fractures, which do not produce the symptoms of compression. A compensation is then made for the space occupied by the effused blood or depressed bone, by a corresponding amount excluded from the cavity of the vessels, and retained in the general circulation.

A careful examination of this case will, I think, elicit observations in support of phrenology. The tone and excitement of the depressed region of the brain must probably have been increased by the invasion of the tumour, on the same principle that the muscles of labouring men are sometimes supported by leathern straps and bandages. On the other hand, the extirpation of the tumour must have had the same effect in removing the tension and mechanical support of the organs, as tapping for abdominal dropsy exerts upon the viscera of that great cavity. As soon as the depressed convolutions began to

be unfolded or distended by the pulsation of the blood-vessels, they experienced a want of that pressure which had before stimulated them into an increase of activity. Their tone then became enfeebled, and continued so until the scalp had contracted adhesions to the outer surface of the dura-mater, and the cicatrix became consolidated, so as to afford a firm and counteracting support to the pressure of the circulation below.

While Mr. Richardson was recovering from the operation, he was visited by several phrenologists, for the purpose of establishing the precise location of the wound. Although they differed in their opinions in regard to the degree in which the organ of Firmness was involved, they all agreed that Self-esteem was affected, and some thought the injury extended also to the organ of Concentrativeness. Inquiries were therefore directed by them to the manifestations of these faculties; and the patient did suggest some points of character in relation to which he conceived he had undergone an alteration. He asserted that he had for a long time previous to the operation lost his self-respect in the presence of company, and his power of confining his mind to any particular train of thought. But these peculiarities were not obvious to me, or to any of his familiar friends; and I have not thought it right to put them down in my estimate of his condition, as affected by the operation. Such affections may have been the result of that confusion in the mind which generally accompanies excessive determination of blood to the head. It has been suggested that they were produced by a paralysis of those organs which were most severely depressed by the deepest portion of the tumour; while, at the same time, the convolutions which lay under the edges of the tumour, and were only slightly pressed upon by it, were stimulated into increased activity of their functions. I will leave the decision of this point, however, to more experienced phrenologists, trusting that the facts which I have here given, will be judged of according to their merits.

ARTICLE VI.

STATISTICS OF PHRENOLOGY IN THE UNITED STATES.

An article with this title has just appeared in the "American Medical Almanac for 1841." This work is published annually in Boston, and is compiled by Dr. J. V. C. Smith, editor of the Boston

Medical and Surgical Journal. It is designed, as its name imports, more especially for members of the medical profession, and contains a great variety and amount of matter on subjects connected with this profession. It is particularly valuable, as a work of reference, for its numerous statistics of medical institutions and societies, as well as for its various notices and essays on medicine. Among other matters, there is an interesting article on the Statistics of Insanity and Institutions for the Insane in the United States, by Dr. S. B. Woodward, superintendent of the Massachusetts State Lunatic Hospital.

We are glad to find the subject of phrenology introduced into the Medical Almanac. If the principles of this science are designed, by their numerous and important applications, to interest and benefit any class of persons, it is certainly physicians. And as this annual circulates extensively among the members of this profession, the article on the Statistics of Phrenology is well calculated to give them some idea of the present state of the science in this country. Though many of the facts here stated may not be altogether new to our readers, yet we are induced to present the following extracts, under their several heads, as they appear in the Medical Almanac:—

History of the Science.—The two principal agencies by means of which phrenology was introduced into the United States were, first, the circulation of foreign periodicals and works; and, secondly, the reports and labours of some of our own countrymen who had made tours in Europe. It is probable, however, that even the influence of these means raised up more enemies than friends to the science. The number of intelligent believers and advocates of it, prior to 1830, was quite small, and those were mostly confined to members of the medical profession. Between the years of 1820 and '26, phrenological societies were formed in New York, Philadelphia, Baltimore, and Washington; this was effected chiefly through the instrumentality of Dr. Charles Caldwell.

The two other most important agencies in advancing phrenology, have been the writings, lectures, and personal influence of Dr. Spurzheim and George Combe, Esq. Dr. Spurzheim landed at New York in August, 1832, and died at Boston in November, three months after his arrival. And though he had scarcely entered upon his labours, yet he lived long enough amongst us to give a strong impulse to the science. While here, he made arrangements for publishing several of his works on phrenology, and delivered two courses of lectures; one in Boston, and the other at Harvard University, Cambridge. His early and unexpected death was greatly lamented. His remains now lie deposited in Mount Auburn Ceme-

tery, beneath a plain marble monument, on which is engraved, in large capital letters, the name of SPURZHEIM. This was deemed a sufficient epitaph. Dr. Spurzheim's visit to our country will ever constitute an important and interesting era in the history of the science. Mr. Combe arrived in September, 1838, and returned to Edinburgh in June, 1840. While here, he delivered full courses of lectures in Hartford, New Haven, Albany, New York, and Philadelphia. In the three cities last mentioned, he repeated them, besides giving one or two lectures in several other places. The average number that regularly attended, may be safely estimated at three hundred persons in each place. Dr. Andrew Boardman, of New York, has prepared a complete and accurate report of those discourses, which are now having an extensive circulation. The mission of Mr. Combe cannot fail to exert a very strong influence in advancing phrenology on this side of the Atlantic. Some idea of the present state and prospects of the science may be gathered from the following statistics.

Books on Phrenology.—Among these stand first the works of Drs. Gall and Spurzheim, which still continue to have a constant sale, and, wherever circulated, find attentive readers. These works are better calculated for careful study and useful instruction, than for mere reading and general popularity. The productions of Mr. George Combe and Dr. A. Combe are decidedly popular, as well as instructive, and have a very great circulation. The "Constitution of Man" has already passed through many editions, having been published in several different forms. It is thought that more than twenty thousand copies have been sold in the United States. Dr. A. Combe's work on the "Principles of Physiology, as applied to Health and Education," (a part of which is strictly phrenological,) has had an extensive sale. The Messrs. Harpers, of New York, have sold more than thirty thousand copies of it. American productions on phrenology are also beginning to multiply, and to meet with a ready sale. Several works of this character have recently been published: among which, are Warne's Phrenology in the Family; Dean's Philosophy of Human Life; Grimes's Phrenology; Haskin's History of Phrenology, &c. *Fowler's Practical Phrenology* has reached the fifth edition; nearly ten thousand copies have already been sold. This is, perhaps, the best work now extant on the elementary principles and practical part of the science.

Phrenological Almanac.—Mr. L. N. Fowler, of New York, published for 1840 an almanac, which, besides a calendar, embraced 32 octavo pages on phrenology. More than ten thousand copies were sold, and it is expected that more than double that number for 1841

will be disposed of during the present year. This annual, though small in itself, and seemingly unworthy of notice, is nevertheless calculated to make very strong impressions on the common mind.

Annals of Phrenology.—This was a quarterly publication, and conducted by a committee of the Boston Phrenological Society. It was commenced in 1834—circulated about three hundred copies annually, and continued only two years.

Dr. Charles Caldwell.—This gentleman has ever been a most able and efficient advocate of phrenology. His writings in its behalf have been very numerous; if they were all collected and published together, they would constitute three or four large octavo volumes. His labours and merits will be more appreciated, as well as held in greater respect, by posterity than by the present generation.

Crania Americana, by Dr. Samuel George Morton, of Philadelphia.—This magnificent work (recently published) is designed to present a comparative view of the skulls of various aboriginal nations of North and South America. It is printed on large fine letter paper, in folio form, and accompanied by seventy-eight plates, beautifully lithographed—each plate presenting the drawing of a skull of the natural size. An able and learned essay on the varieties of the human species, constitutes the introductory portion. It also contains, in the form of an appendix, an excellent essay by Mr. George Combe, on the relation between the Natural Talents and Dispositions of Nations, and the Developement of their Brains. By means of this dissertation, together with the descriptions and measurements given in the body of the volume, its bearing on phrenology can readily be shown. The anatomical and phrenological measurements are very numerous and valuable. The number of distinct measurements in the phrenological tables, exceeds seven thousand five hundred. This work is one of the most important on the natural history of man that has ever been published, and will long remain an honour to the science of our country, as well as a monument of the labours and genius of its author.

Phrenological Societies.—There have been formed at different times in the United States, between forty and fifty phrenological associations. Some of them have been conducted with much zeal and ability, and greatly promoted the interests of the science; while others have been merely nominal in their character, and proved quite inefficient in their labours. Past experience renders it doubtful whether societies can permanently flourish which are organised exclusively for the cultivation and advancement of phrenology.

Craniological Specimens.—The largest collection of crania in the United States, is possessed by Dr. S. G. Morton, of Philadelphia.

A part of his cabinet is deposited in the Academy of Natural Sciences. His whole number of specimens amounts to one thousand; there being over five hundred crania of animals, and nearly the same number of human skulls. This, with one or two exceptions, is the largest and most valuable collection of crania that can be found on the globe.

Cabinet of the Boston Phrenological Society.—This museum numbers about five hundred, and is made up mostly of the specimens which Dr. Spurzheim left in Boston. There are many rare and valuable phrenological specimens in this cabinet, though it is to be regretted that no better use or appropriation has been made of them for some years past. Mr. O. S. Fowler, of Philadelphia, and his brother, L. N. Fowler, of New York, have each large and valuable cabinets of skulls, casts, busts, &c. The whole number of their specimens will not fall much short of eight hundred. They have made some important improvements in the art of taking casts and busts. They are now able to take with ease and safety, fac-similes of the living head, as correct almost as life. These gentlemen have already taken the busts of more than two hundred of our leading and distinguished men. The specimens used by Mr. Combe, in his lectures on phrenology in this country, are deposited in the hall of the medical department of Yale College, and constitute a large collection. The Albany and Buffalo Phrenological Societies have each a very respectable cabinet of skulls, casts, busts, &c. There are also numerous other phrenological collections of less note, connected with institutions and societies, or owned by private individuals.

It is impossible to estimate the number of believers in phrenology in this country. They may be found in every state of the union. For a few years past, the science has been rapidly advancing, as well as gaining in character and popularity. Many of the leading periodicals of the day, particularly the medical journals, take a decided stand in its favour; while others generally allude to it, whenever occasion requires, with candour and respect. The science is now embraced by large numbers in the medical profession, especially among the younger portion. It is also favourably received by many members of the legal and clerical professions, and is beginning to be introduced and respectfully treated in our literary, scientific, and medical institutions. The day of its final triumph and general adoption cannot be far distant.

MISCELLANY.

Medico-Chirurgical Review and Phrenology.—This is one of the oldest and ablest medical periodicals in Great Britain. It is published at London, and conducted by Dr. James Johnson, whose name is well known as high authority in the medical profession. The Medico-Chirurgical Review has always taken a decided stand in favour of phrenology. The October number for 1840, contains a very able and elaborate review of Dr. Morton's Crania Americana, which is treated upon strictly phrenological principles, and is a masterly performance. This review extends over thirty pages, in fine type, and compliments the industry, research, and acquirements of Dr. Morton in the highest terms. There are several important points discussed, that we should be glad to notice, and may refer to hereafter; but, for the present, must satisfy ourselves with one or two brief quotations, which will convey to the reader some idea of the ground occupied by the writer in relation to phrenology. In speaking of the structure of the brain, and its relations to the skull, the reviewer remarks as follows:—"After the same manner, we retrace the *mental* characters through the shape, size, and other conditions of the brain, as indicated by the peripheral forms of the head and skull. We may fairly contemplate the brain as an aggregate of organic instruments, and the mind as an aggregate of powers or faculties; and assured are we, that the cerebral instruments and mental faculties are co-existent and severally co-operative—each individual of the latter naturally using its own peculiar one of the former, in the exercise of its appropriate functions. Hence, on these principles we may seek to trace the mental characters of disposition and capacity by inspection of the head, and the accuracy of the results is susceptible of trial by their correspondence with the mind's manifestation—in thought and feeling, discernible by reflection on consciousness; in speech and composition, in act and conduct, discernible by observation. We are desirous, in fine, of seeing the *head* and its constituent organs adopted, in their forms, relations, and conditions, as the source of elementary principles in the anthropological and psychological systems." Again: The reviewer, in referring to Dr. Morton's Introductory Essay, says—"We feel reluctantly obliged to limit our observations to a few cursory notes, selected from his pages with a view to elucidate that *natural correspondence which subsists between the shape of the head and the character of mind in actual life, which we regard physiologically as constituting the most important fundamental principle in mental science—not useless in education, government, and legislation, or moral, religious, and medical philosophy.*" We have here eight pages illustrative, and, in proof of the above principle, chiefly made up of notes from the Crania Americana, which is carrying out more fully and completely a proposition which we suggested, and actually commenced, in a review of the same work in this Journal last year.

De Ville's Phrenological Cabinet.—Mr. De Ville, of London, who was for a time associated with Dr. Spurzheim, has a very extensive collection of casts and busts, amounting to about twenty-four hundred specimens. At the late meeting of the British Phrenological Association, he gave the following description of his cabinet. He began by

De Ville's Experience

stating the causes which led to the formation of such a large collection. When his attention was first drawn to phrenology, many of the organs were marked as *conjectural* only, and it was desirable to collect facts to prove or disprove the existence of them. About five hundred casts were collected for this special purpose. It was also desirable to obtain specimens of every organ, *very large* and *very small*, from persons living, and well known. About seventy are of this description. Another point was to obtain casts of youths, where difficulties occurred in educating them for particular occupations, and also where knowledge was easily acquired with little or no instruction. At least seventy were taken for this purpose, many of whom were interesting cases. About one hundred and fifty casts also were taken of pious persons, devoted to religion, several of whom had abandoned other occupations for theological pursuits. There are also forty casts of artists, painters, sculptors, &c. many of them of celebrity. Of navigators and travellers, there are about thirty casts. Of poets, authors, and literary characters, about eighty. Of musicians, composers, and amateurs of music, upwards of seventy. Of pugilists, there are twenty-five. There are also in the collection about one hundred and forty casts, showing change of form of the head to have taken place, corresponding to the altered studies and habits of the persons at various ages—many of the changes occurring after thirty and forty years of age. Besides all these, there are upwards of three hundred and fifty casts of distinguished persons, noblemen, legislators, judges, barristers, lawyers, astronomers, engineers, actors, &c. &c.

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The second part of the collection consists of criminals, cases of diseased brain, and national crania. The criminals are not confined to the united kingdom, about one third being from foreign countries; some of them state criminals, and others of extraordinary character. The diseased cases are those of idiots, imbeciles, insane persons, and of malformations. This part comprises one hundred and twenty. The national crania consist of about five hundred; one hundred and fifty being real skulls, and the rest moulds and casts, of well authenticated persons. Said Mr. De Ville, I am much indebted to the late Baron Cuvier for permission to take casts from all the well authenticated skulls in his splendid museum. I have also made a large collection of busts of ancient philosophers and great men, taken from the marbles originally in the Louvre, Florentine, and Prussian galleries, and private collections; and it is surprising how their phrenological developements bear out the biographical accounts of them. In addition to all this, there is a large collection of the skulls of animals and birds. Mr. De Ville concluded his very interesting account by stating that the collection had always been accessible to phrenologists, and all literary and scientific men, as well as to all persons of eminence; and that he had the consolation of knowing, that the most distinguished individuals, both native and foreign, consider the collection as an extraordinary mass of evidence in support of the truth of a science which has already effected so much to mankind.

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Dr. Morton's Collection of Skulls.—We have before us a catalogue of the skulls of man and the inferior animals in the collection of Dr. S. G. Morton, of this city. This is the most extensive collection of crania in the United States, and is not surpassed, in number and variety of specimens, by more than one in Europe, viz. that of the late Professor Blumenbach, of Gottengen; and even this exception is doubtful. There

Dr. Morton's Collection.

are in Dr. Morton's cabinet more than *five hundred* human skulls, collected from all parts of the world. He has a very great variety of Indian skulls, and a large number of Mexicans and ancient Peruvians. There are about *one hundred* skulls of the ancient Egyptians, obtained from the catacombs of Thebes and Memphis, and are supposed to be more than four thousand years old; some of these possess great interest, in a phrenological point of view. There are also about the same number of skulls of native-born Africans, or negroes; these, in their cranial developements, present quite a contrast with the preceding class, and evidently show that their possessors must have belonged to an entirely different race, or at least had characters essentially different. At some future time, we may give a description of the more rare and valuable human crania in Dr. Morton's collection.

The number of animal skulls, including quadrupeds, birds, fishes, and reptiles, is equally extensive, exceeding five hundred specimens. The receptacle of such a collection may very appropriately be named "*Golgotha*," a "place of skulls." "The principal object," says Dr. Morton, "in making the following collection, has been to compare the characters of the skull in the different races of men, and then again with the skulls of the lower animals, and especially with reference to the internal capacity of the cranium, as indicative of the size of the brain." That magnificent work, the "Crania Americana," is already, in part, the fruit of Dr. Morton's researches in this department of science, and we are happy to learn that he is still prosecuting his inquiries with the view of farther contributions to the public.

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Pathological Fact.—The May number of the American Journal of Medical Sciences, for 1840, contains an interesting pathological fact confirmatory of phrenology. "A young man accidentally fired his rifle when its muzzle was pointing towards his face; the bullet first entered the left nostril, and laid it open so far as the nasal bone; it then penetrated the skull at the *inner angle of the left superciliary ridge, and emerged from the cranial cavity, through the frontal bone,* at a point about two inches above the place of entrance." "Particles of brain were found lying upon the floor." After proper medical treatment, he completely recovered, and appeared, at the time this account was written, to be in the full possession of all his faculties, says Dr. H. Janson, the attending physician, "*except, perhaps, a slight imperfection of those organs, phrenologically, ranged in the course of the ball.*"

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Progress of Phrenology.—We are glad to learn that a series of letters from the pen of Mr. M. B. Sampson, on "Criminal Jurisprudence, in relation to Mental Organisation and Social Responsibility," are now in course of publication in the London Spectator. It is well known that this is one of the most influential of the English periodicals, and the insertion of these letters in its columns cannot fail very materially to accelerate the progress of our science.

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English Phrenological Journal.—This journal, which has been published at London for the last three years, is transferred the present month back to Edinburgh.